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Document Name: SAE J397: Deflection Limiting Volume-Protective Structures Laboratory Evaluation

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Standards Body: Society of Automotive Engineers

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(R) DEFLECTION LIMITING VOLUME—ROPS/FOPS LABORATORY EVALUATION—SAE J397 APR88

SAE Standard

Report of the Construction and Industrial Machinery Technical Committee approved July 1969, completely revised by the Off-Road Machinery Technical Committee April 1988. Rationale statement available. This standard is technically similar to ISO 3164-1979.

1. Introduction—This standard is technically similar to ISO 3164-1979. Portions relating to acceptance criteria have been moved to SAE J1040 APR88.

2. Purpose/Scope—To establish limits on deflection permissible during laboratory evaluations of certain operator protective structures, such as ROPS and FOPS, as defined in other SAE reports including SAE J1040 APR88, J231 JAN81, and J1043 APR85.

3. Definition—The Deflection Limiting Volume (DLV) is an orthogonal approximation of a large, seated, male operator wearing normal clothing and a hard hat. (See Fig. 1.)

4. Accuracy—In practice, all lengths and positions shall be within ±13 mm of those specified or determined herein.

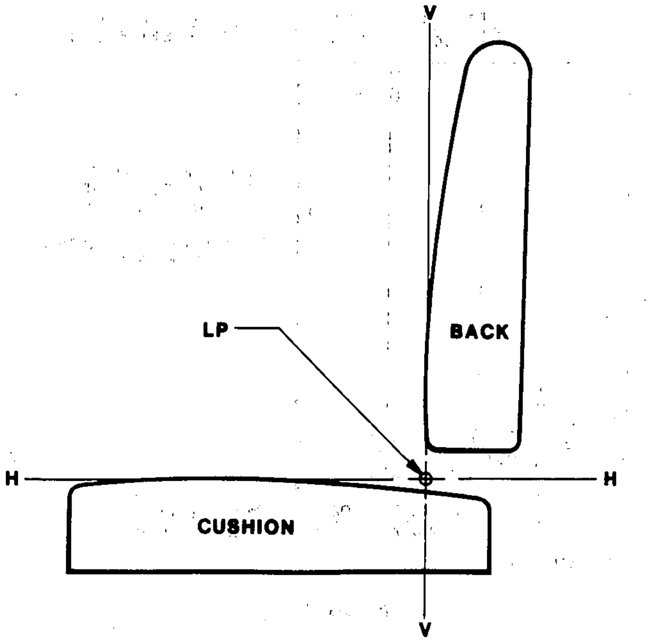

FIG. 2—DETERMINATION OF LOCATING POINT (LP)

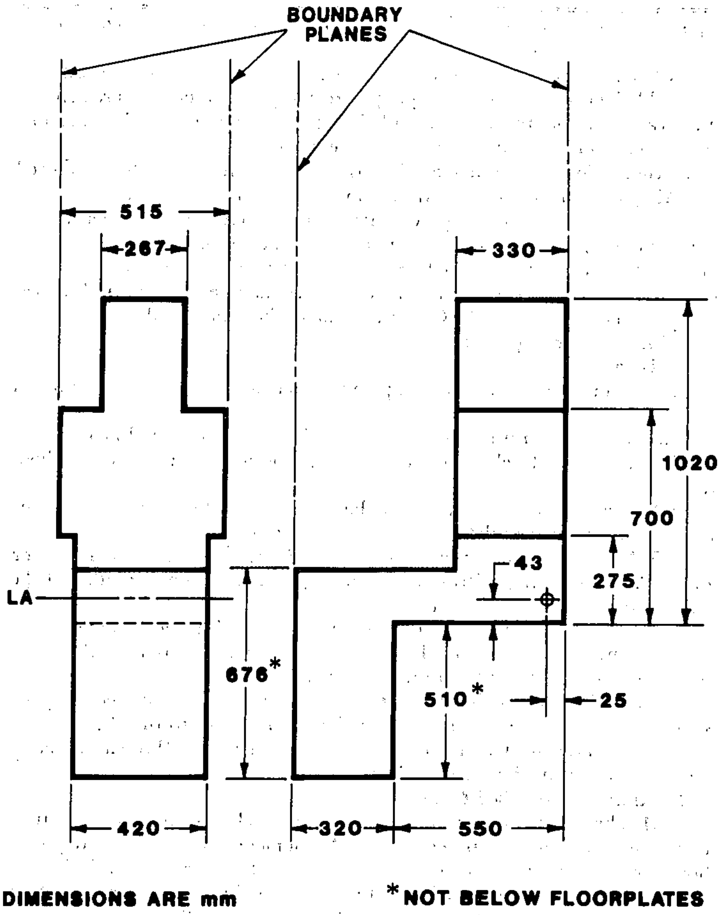

FIG. 1—DEFLECTION LIMITING VOLUME

5. *Location of DLV*

5.1 The seat shall be adjusted to the rearmost position first and then to the lowest position possible in the rearmost position. The position of seats with suspension systems shall include that static deflection a 100 kg seated operator would impose on the suspension system (all mechanical, hydraulic, or gas elements to be at the manufacturer's recommended settings for this size operator).

5.2 For machines, which have multiple seat positions, either rotatable or multiple locations, the seat location for mobile operation shall be used.

5.3 A locating point (LP) and locating axis (LA) shall be determined as follows:

5.3.1 The LP shall be in the middle vertical plane, which is parallel to the longitudinal axis of the seat.

5.3.2 The LP shall be at the intersection of the following two lines in this plane. (See Fig. 2.)

HH—The horizontal line, which is tangent to the highest point of the seat cushion in this plane.

VV—The vertical line, which is tangent to the most forward point of the seat back in this plane.

5.3.3 The LA shall be that line, which is perpendicular to the middle, vertical longitudinal plane of the seat and intersects that plane at the above defined LP.

5.4 The DLV shall be positioned so its LA coincides with the LA defined in paragraph 5.3. The DLV shall be centered transversely at the seat location, and its principal axes shall be parallel to lines HH and VV of Fig. 2. (This positioning takes nominal compression of the seat cushion and back into account.)

5.5 The location of the DLV shall remain coincidental with the LA even though that line may move during any or all of the laboratory loadings.

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